material is below the 1,000 ppm total halogenated organic compounds threshold, or destroyed in an approved thermal destruction unit. Additionally, if excavation of material from the tidal channel is needed, some type of flow restriction structure may be needed to allow for the excavation of sediments within the saturated zone. Therefore, the alternative evaluation data needs identified focus on the collection of data to support these two potential remedies.

- Geotechnical data to include grain size distribution and bearing capacity will be required for samples of a confining layer beneath the tidal channel sediment to evaluate the feasibility of constructing a flow cutoff wall to adequately reduce flow into the area of potentially affected sediment.

- Total halogenated organic compounds (HOCs) data are needed for soils from within and below the denuded area proposed for removal, to determine the feasibility of and percentage of the total excavated volume that could be placed in a landfill prior to May 8, 1992.

- Various landfill disposal acceptance data are needed for the material proposed for disposal to evaluate or confirm the applicability of the waste to a given landfill. Additionally, the concentration of metals must be known to properly evaluate the applicability of incineration as a means of waste destruction.

1.4 SAMPLING NETWORK DESIGN

The data needs identified for site characterization, risk assessment and alternative evaluation are combined in the sampling network, where applicable, for efficient collection and analysis. The combined data set was compared to existing federal and New Jersey ARARs to ensure that adequate data are collected to meet site-specific, chemical-specific and alternative-specific needs and that detection limits are designated to meet the requirements. The analytical approach and level of data quality objectives was selected to be consistent with the ultimate data use. Some assumptions which were made pertinent to the design of the sampling network are presented below.

- Although the clean up level presented in the ACO for the removal under USEPA Region II is 10 ppm for DDT, it is anticipated that the NJDEP may require cleanup levels less than that for site remediation of surface soils. A goal of this project is to complete the site characterization and site remediation in as few steps as possible; therefore, delineation of the extent of contamination will be to 3 ppm for DDT and 2 ppm for DDE and DDD in the surface soils (0 to 2 feet) and 10 ppm for the delineation in subsurface soils.

- Based on the low water solubility of the soil contaminants-of-concern and precedence established at other USEPA Region II/NJDEP sites, it is assumed that DDT would not be removed from below the seasonal average groundwater table. Therefore, site characterization of DDT concentrations below the water table will not be included in the sampling network.

- Sediments appear to have been contaminated by surface water or sediment runoff from the site ~~[however, the public health risk from direct contact with stream sediments is considered low due to the physical characteristics of the bottom material, shallow depth of water and low flow characteristics of the tidal channel.]~~ Existing data (Sampling Station SO-1) appear to be the result of sampling slumped surface soils from the adjacent former disposal area and not characteristic of tidal channel sediment concentrations. ~~[Because dredging of the tidal channel would likely cause irreparable damage to the stream bed and the concentration of DDT~~

~~attenuated to the sediments will slowly diminish following the removal of the source, i.e., the contaminated soil in the former disposal area.~~ It is not anticipated that site remediation will include the removal of sediments from the tidal channel. However, in light of the potential for site-related contaminants to impact aquatic resources, samples will be collected to support an ecological risk assessment to form the basis of a remedial decision.

1.4.1 Surface Soil Sampling

Surface soil sampling includes those samples collected from a depth interval having an upper limit from 0 to 6 inches below existing grade. Samples collected for analysis will be used to further define the visual denuded demarcation around the former disposal area, confirm and delineate the nature and extent of surficial contamination in the woods east of and in the field south of the former disposal area and to characterize the nature and extent of DDT contamination in the drainage channels. The proposed surface soil sampling locations are shown on Figure 1-2. The surface soil sampling network design is described as follows:

a) Confirm the visual denuded characterization/delineation of surface soil contamination around the perimeter of the former disposal area.

At eight proposed sampling stations, separated by 80-foot horizontal increments around the perimeter of the former disposal area, collect pairs of surface and near surface soil samples from 5 feet outside the visual denuded demarcation line. The 5-foot distance from the area void of vegetation was selected to compensate for the potential growth of vegetation along the perimeter where the concentrations of vegetation inhibiting contaminants might be somewhat reduced, yet exceed the proposed removal action level. The pairs of samples will be collected from 0 to 6 inches and 12 to 18 inches below existing grade. The samples will be analyzed for the Target Compound List (TCL) of pesticides, arsenic and thallium. The results will be compared to proposed action levels and to the concentration of contaminants from within the area proposed for removal. Because the data will be used for site characterization and risk assessment purposes, the data collected should be Data Quality Objectives (DQO) Level IV data.

b) Known or suspected "Hot Spot" Delineation of Nature and Extent.

At 23 proposed surface soil sampling stations surrounding the previously sampled soil sampling stations found to contain DDT and its metabolites concentrations at the surface which exceeded background, collect surface soil samples for analysis to determine the nature and extent of surface soil contamination. These samples will be collected from 25-foot and 50-foot increments to the north, south, east and west of former sampling stations SO-2 and SO-3, in the woods east of the former disposal area and around former sampling station SO-5 in the field south of the former disposal area. Samples will be collected from 0 to 6 inches from the surface and will be analyzed for the TCL pesticides, arsenic and thallium. These data will be used for site characterization and risk assessment purposes, and therefore will be generated at DQO Level IV. The data will be evaluated to determine if surface concentrations exceed the proposed action level; to assist in defining the potential source of this contamination outside the former disposal area (i.e., windblown dispersion, anthropogenic redistribution; to determine if these areas can be treated as segregated areas of contamination away from the former disposal area or if they must be treated, for purposes of the removal, as contiguous contaminated property with the former disposal area. The analytical results from these samples will also be used to define the appropriate location for the removal fencing.

location for full TCL/TAL analysis to augment the existing analytical data base and fully characterize the indigenous soils. Sample results will be used for risk assessment and site characterization and, therefore, will be analyzed and reported at DQO Level IV. Those samples from the lowermost collection interval that do not exceed the action level will be used to characterize the residual public health and environmental risk for the subsurface source and receptor pathway.

b) Determine the Extent of Contamination in Soils Below the Vertical Limit of Waste Deposition

At eight sampling locations within the main area of disposal, (Figure 1-3), subsurface soil samples will be collected to define the level of contamination of soils below the vertical limit of waste disposal and to determine the method by which these materials may be disposed. Additional data will be collected to provide waste characterization data for obtaining approval for disposal at a commercial disposal facility.

Subsurface sampling will proceed at the proposed locations via hollow stem auger drilling with continuous split-spoon sampling from a track-mounted drill rig. Each boring will be visually logged to identify subsurface lithology, depth of waste deposition and occurrence of groundwater. Three consecutive split-spoon samples will be collected for chemical analysis from each boring beginning with the sample encountering the waste/underlying soil interface. Split-spoons and auger flights will be decontaminated between samples and borings, respectively, to minimize the potential for cross-contamination.

A total of 24 samples are anticipated for chemical analysis. Twenty of these samples will be analyzed for the TCL pesticides, arsenic and thallium. Four of the samples that visually appear to represent worst case conditions will be analyzed for the RCRA list of HOCs to demonstrate the relationship between the concentrations of pesticides and total HOCs. One sample will be analyzed for the full TCL/TAL to augment the existing data base and fully characterize the soils in contact with the waste, prior to the removal.

To complete pre-disposal approval applications for commercial disposal facilities, two of the four worst-case samples will also be analyzed for total RCRA metals, pH, ignitability, reactivity and toxicity with analysis for TCLP leachates for RCRA metals, thallium, volatile organics, semivolatile organics and pesticides.

c) Provide Design Data for the Design of a Tidal Channel Cutoff

As noted previously, significant excavation of tidal channel sediments is not anticipated ~~due to the nature of the contaminants and the harmful effect on aquatic biota that might be caused by a dredging or excavation operation.~~ A possibility does exist, however, that contaminated soil or waste has sloughed off the bank and fallen into the channel. Additionally, the process of excavating the waste disposal area may result in additional material falling into the tidal channel. To minimize the impact on the tidal channel from these activities, a sheet pile cutoff wall may be installed to isolate the flow in the tidal channel from the potentially-affected area allowing excavation of the contaminated material in the isolated area with minimal impact to the channel.

To design an effective cutoff wall, subsurface soil samples will be collected to obtain physical properties of the overburden. The borings drilled for the two northernmost groundwater monitoring wells to be installed as discussed in Section 1.4.4 will be advanced beyond the desired depth of the

wells to locate consolidated bedrock or a confining layer suitable for supporting the cutoff wall. The borings will be advanced a maximum of 50 feet below grade in this effort. Shelby tube samples will be collected from the proposed confining strata. Upon completion of sampling activities, the borings will be tremie grouted back to the desired depth of the groundwater monitoring wells in accordance with NJDEP procedures.

Collected soil/rock samples will be analyzed for a variety of parameters including grain size distribution, in-situ permeability, shear strength and bearing capacity. These data will be used to support design calculations for the cutoff wall.

1.4.3 Sediment Sampling → TO REFLECT ADDITIONAL CHANGES AS PER BTAG COMMENTS.

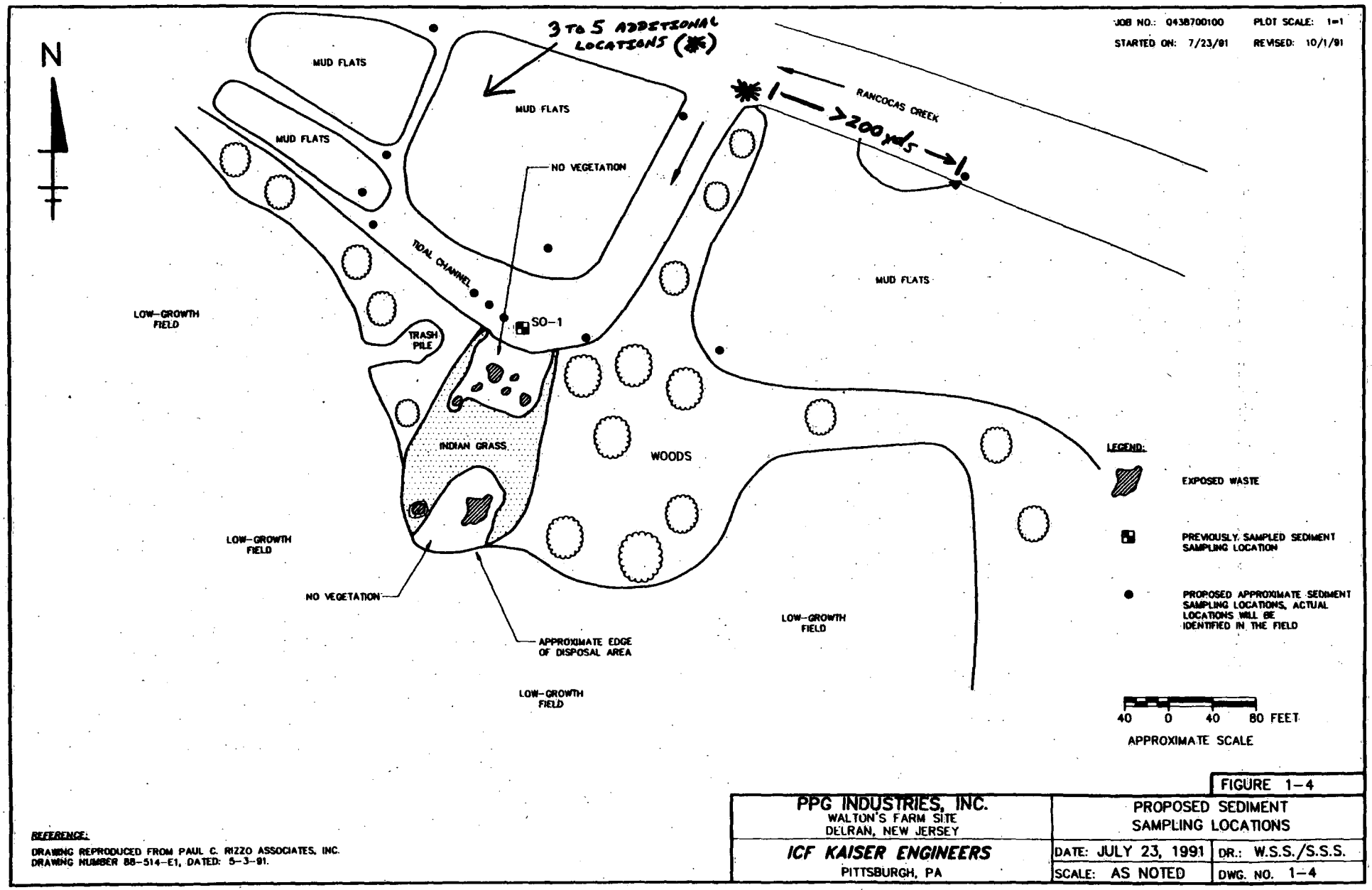
The tidal channel immediately to the north of the former disposal area receives groundwater discharge and surface water and sediment runoff from the unvegetated surface of the disposal area. Former sampling station SO-1 was found to contain in excess of 1,000 ppm DDT in the sediment. Based on the sampling location, i.e., at the toe of the barren slope from the former disposal area, and depending upon the time of day the sample was collected (high versus low tide), this concentration may be more characteristic of slumped soil from the surface of the disposal area than tidal channel sediment. Although it is not anticipated that site remediation will include the sediment in the tidal channel, collection of samples and analysis is required for contaminant migration pathway characterization and for environmental/ecological and public health risk assessment purposes. The proposed sampling locations are shown on Figure 1-4. The sediment sampling network is described as follows.

a) Delineation of Contaminant Concentrations in the Tidal Channel Sediments.

At twelve sampling stations within the tidal channel adjacent to the former disposal area, and in Rancocas Creek, collect sediment samples from the top six inches of sediment in depositional areas. The samples will be collected from 10, 20 and 30 feet downstream of the former sampling location SO-1, at an up-stream location out of the potential influence of the disposal area, up-stream in the tidal channel at the inflow confluence with the Rancocas Creek, upstream and downstream of the tidal channel in Rancocas Creek and on various representative mud flats. All samples will be collected from depositional areas during low tide conditions. All samples will be analyzed for the TCL pesticides, arsenic and thallium. These data will be used to characterize the level of contamination in the sediment, calculate the affected volume of material and complete the groundwater discharge and surface water runoff source receptor migration pathways. A representative group (5) will be analyzed for TOC and Grain Size for use in the assessment of contaminant migration and bioavailability. Additionally, the data will be used in the public health and environmental risk assessment to quantify the risks of residual contamination. DQO Level IV data will be generated for risk assessment and site characterization data use.

1.4.4 Groundwater Sampling

Although the contaminants of concern possess very low water solubilities, waste may be in contact with the groundwater beneath the disposal area. As such, the extent of potential influence will be investigated. The proposed groundwater monitoring well locations are shown on Figure 1-5.



REFERENCE:
DRAWING REPRODUCED FROM PAUL C. RIZZO ASSOCIATES, INC.
DRAWING NUMBER 88-514-E1, DATED: 5-3-91.

FIGURE 1-4

PPG INDUSTRIES, INC. WALTON'S FARM SITE DELRAN, NEW JERSEY	PROPOSED SEDIMENT SAMPLING LOCATIONS
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: JULY 23, 1991 | DR.: W.S.S./S.S.S. SCALE: AS NOTED | DWG. NO. 1-4

4.4 WASTE MATERIAL HANDLING

Investigation derived wastes will be handled in accordance with the following procedure which follows established NJDEP DHSM policy.

There are potentially five types of wastes that will be generated during the pre-removal site characterization at the PPG Walton's Farm Site project. They are:

- General garbage
- Contaminated clothing, filters, etc.
- Drill cuttings
- Groundwater
- Decon water

PPG will provide EPA with all documentation related to the disposal of any waste material generated on-site, including but not limited to manifests, certificates of destruction, and LDR forms for hazardous materials and bills of lading for non-hazardous materials.

General Garbage

General garbage may include such items as packaging material, unused sample jars, gravel pack bags, cement bags, pallets, wood and any other non-contaminated garbage. All such material will be disposed locally with a trash hauler.

Contaminated Clothing, Filters, etc.

Contaminated materials that will be generated may include such items as tyveks, used sample jars, used preservative equipment, used filters, etc. This waste will be placed in a heavy duty plastic bag staged in a secured, designated area. The bag will be labeled with the date of generation, generator name and number, site name and number, and additional requirements of N.J.A.C. 7:26-8.3 et seq. The waste will be disposed within 90 days of generation.

Drill Cuttings

All excess drill cuttings will be collected in 55-gallon drums and stored in the drum staging area for subsequent offsite disposal during the removal action.

Groundwater

Onsite well development and purge water will be collected for a volatile organics scan with an ~~HNu~~ and either retained for offsite disposal if volatile organics are detected or discharged to the ground and allowed to infiltrate if no volatile organics are detected. The discharge will be directed so that it will not migrate off-site or enter the Rancocas Creek directly. The pumping rate for development will not be reduced in order to eliminate off-site migration. In the event that the development pumping rate exceeds soil infiltration capacity, development water will be contained and allowed to infiltrate on the site.

NOTE: HNU NOT SPECIFIC TO CONTAMINANTS OF CONCERN

Decon Fluids

All decon fluids will be collected for ~~HNu~~ screening and disposed of in the same manner as the groundwater.

3.1.2 Basis for Excavations

The approach to the excavation and material segregation is driven by the following four elements:

- Materials which are visibly contaminated exceed the land disposal restriction of 1,000 mg/kg of HOC's, therefore, no segregation is required.
- Excavation will not proceed beyond the high tide water table.
- ~~Contaminated sediments in the tidal channel will not be excavated due to the potential adverse impact on aquatic life and to the tidal channel habitat.~~
- Excavation will proceed to a point equal to one half the distance (both vertically and horizontally) between a sampling location which exceeds the removal criteria and a sampling location which does not exceed the removal criteria.

Based on these elements, the initial excavation proposed, as designed from existing data, is illustrated in Figure 3-4. Subsequent excavations are illustrated in Figures _____.

The excavation will proceed in general from areas of soils containing lower concentrations of contaminants to areas most contaminated, from peripheral areas to the main disposal area and from the tidal channel embankment toward Creek Road (Northeast to southwest). To ensure disposal by the May 8, 1992 variance expiration date, landfillable materials will be excavated before materials to be incinerated, where possible.

Although the proposed excavation will not proceed beyond the water table, some of the materials excavated may be saturated or exhibit free liquids to the extent that they cannot be transported or disposed without prior physical stabilization. Should this be required, a suitable stabilizing agent (e.g., cement kiln dust) will be delivered to the site and appropriate quantities of waste and stabilizing agent will be mixed in a rolloff box designated for this purpose. Stabilized material will be transferred to another rolloff box for storage, or direct shipment.

3.1.1 Proposed Equipment

Performance of the proposed removal action will require various pieces of equipment for excavating, loading and grading. Table 3-1 summarizes the major equipment which may be required to complete the project.

Table 3-1

Item	Purpose
Track-Mounted Excavator (Caterpillar 235 or equivalent)	Excavation of Main Disposal Area
Tire-Mounted Back Hoe (Case 580K or equivalent)	Smaller Excavations in Wooded Areas